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ABSTRACT

The effects of physical modifications of the minimum competency test on the performance of third grade learning disabled (LD) students (n=345) on versions of a Florida state minimum competency test are evaluated. The test modifications included alterations in line length, groupings of items, answer formats, administration procedures, as well as changes in graphic representations within the test, and the test's general physical layout. Test content (i.e., state standards assessed) was not altered. No differences were indicated in scores obtained on the large-print versions of a physically modified test when compared to performance on a regular-print version of the same test. Learning disabled students did perform better on the modified tests compared to the unmodified tests. Test modifications that facilitate performance of LD students are: (1) completion of subsections of the test that include 30-40 items at a time; (2) adding at least one example for each different set of items within any section of the test; (3) grouping items that measure similar skills together in progressive order of difficulty from easiest to most difficult; and, (4) placing answer options in a vertical format with flattened, horizontal elliptical ovals for answer bubbles placed on the right; (5) using unjustified formats for reading comprehension passages and placing them in separate boxes set off from the sentendes testing comprehension; and (6) using continuation arrows and stop signs to organize the flow of items within the tests. (PN)

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Research Resort No. 102

EFFECTS OF TEST MODIFICATIONS ON MINIMUM COMPETENCY TEST PERFORMANCE OF THIRD GRADE LEARNING DISABLED STUDENTS

Susan Beattie, Philip Grise, and Bob Algozzine

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Research Report No. 102

EFFECTS OF TEST MODIFICATIONS ON MINIMUM COMPETENCY TEST PERFORMANCE OF THIRD GRADE LEARNING DISABLED STUDENTS

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Abstract

The performance of third grade learning disabled students on several versions of a state minimum competency test was evaluated. No differences were indicated in scores obtained on the large-print versions of a physically modified test when compared to performance on a regular-print version of the same test. Learning disabled students did perform better on the modified tests compared to the unmodified tests. The results are discussed with regard to assessment practices. Several conclusions with implications for the minimum competency testing movement are offered.

Effects of Test Modifications on Minimum Competency

Test Performance of Third Grade Learning Disabled Students

The assessment of minimum competence is a current educational rage. Dissatisfaction with the results of contemporary education programs has stimulated the movement. As McCarthy (1980) indicated:

> The minimum competency testing (MCT) movement, nurtured by the growing public demand for educational accountability, has resulted in competency testing legislation in over three-fourths of the states. In 17 states, the passage of competency tests is required for high school graduation. In other states, local school districts are given the option of using the tests as graduation requirements, and in some states the tests are used solely to identify students' remediation needs. (p. 166)

Issues have been identified and addressed by advocates and critics of "the movement" (cf. Jaeger & Tittle, 1980); concerns are generally more critical when minimal competency testing of handicapped students is considered.

Safer (1980) argued that competency testing had serious implications for handicapped students relative to future job placements; she believed that "students who do not receive high school diplomas may be severely penalized in the job market" (p. 289). Fenton (1980) addressed legal concerns of competency testing of the handicapped. She pointed out that rights of "equal opportunity" to receive an education and "protection of due process" have been guaranteed to handicapped persons by recent court decisions and legislation; she concluded that "schools encounter a Pandora's box of individual rights when the results of competency testing determine an individual's educational status" (p. 187). Education specialists in

Florida are aware of the problems involved in testing handicapped learners; current statutes allow:

> appropriate modification of testing instruments and procedures for students with identified handicaps or disabilities in order to ensure that the results of the testing represent the student's achievement, rather than reflecting the student's impaired sensory, manual, speaking, or psychological process skills, except where such skills are the factors the text purports to measure. (Florida Statutes, Chapter 232, Section 246)

According to the Florida administrative Code (State Board Rule, 6A-1.943), students may be administered a minimum competency test during several brief sessions whether individually or as a member of a small group. Additionally, they may record answers directly in the test booklet or use other recording devices (e.g., typewriters) and auditory aids (e.g., tape recorder) as appropriate and necessary. The Code also permits the use of large print booklets, Braille tests, or magnifying devices.

The above test modifications are clearly more general "procedural" modifications than changes in the type and kind of test items or formats. Salvia and Ysseldyke (1978) indicated that test items often measure the student's ability to "receive a stimulus and then express a response" (p. 25); they add that "common sense tells us that if a student cannot read the directions or write the responses, a test requiring these abilities is inappropriate" (p. 26). A handicapped student's performance on a minimum competency test may be as much a function of the nature and kind of test items as it is the student's "ability." This is not to suggest that a particular item's content is either appropriate or inappropriate for handicapped students. Rather, the argument is for consideration of appropriate

test modificatiors (not procedural modifications) for handicapped students.

There is little data available nationally indicating how handicapped students perform on competency tests. The purpose of this study was to investigate the effects of physical modifications of the minimum competency test on the performance of third grade learning disabled (LD) students. The test modifications included alterations in line length, groupings of items, answer formats, administration procedures, as well as changes in graphic representations within the test, and the test's general physical layout. The content (i.e., state standards assessed) of the test was not altered in this research; test items simply were reformatted and rearranged to produce a "different looking test." The nature of LD students' performance on a modified version of the test was analyzed as were the effects of print size and test type (e.g., modified v standard) on content mastery.

Method

Subjects

Third grade LD students (n=345) in seven school districts participated in this research. In Florida, the decision to classify a student as learning disabled is made on the basis of an operationalization of the current federal definition (cf. Lerner, 1981; Mercer, 1979). The "criteria for eligibility" include the following:

(a) Evidence of a disorder in one or more of the basic psychological processes based on a student's expected level of functioning. A score of two standard deviations or less below the mean in one process area

or a score of one and one-half standard deviations or less below the mean in three or more process areas. In cases where the standard deviation is not available, a score of 70 percent or less of the student's expectancy age in one process area or 80 percent or less in three or more process areas may be used.

(b) Evidence of academic deficits based on a student's expected level of functioning. The levels are set at 85 percent of expectancy age for third through sixth grade students.

Procedures

Test modifications. An analysis of the Florida State Student Assessment Test (SSAT-I) indicated that several general modifications could be implemented as potential aids to learning disabled students in third grade. Specifically, the following changes were made in the format of the test:

(a) The order of selected items was changed to reflect a hierarchical progression of skills whenever possible.

(b) All multiple-choice answer options were placed in a vertical format with scoring "bubbles" placed to the right of each choice.

(c) The shape of individual answer bubbles was a horizontal elliptical oval.

(d) Sentences for reading comprehension items were arranged in unjustified formats when possible; that is, complete sentences were left intact rather than broken to establish a right and left justified appearance.

(e) Reading comprehension passages were placed in shaded boxes prior to the test items related to them.

(f) Examples were prepared for each skill set (i.e., selected number of items) within the test; all examples were "set off" in boxes from the test items.

(g) Arrows were placed in the lower right-hand corners of pages which were part of continuing sections of the test; stop signs replaced them at ending pages.

A complete modified test containing 148 items was prepared in

regular (i.e., 13 point) type size; except for the specified alterations (i.e., sequence, form, and so on), the standards, skills, and test items used in the standard version of the SSAT-I were included in this modified version of the test. A second modified test was produced in "large print" (i.e., 18 point type), which was approximately 50% larger type than the standard type size.

Sampling procedure. The modified test was administered to the sample of learning disabled students. To minimize disruption within the daily educational programs of these youngsters, the test was broken into several parts containing from 33 to 48 items each. Participating students took only one part of the modified test; this required approximately 30-45 minutes of class time and was considered a minimal disruption of academic instructional time. The number of students administered each portion (i.e., subsection) of the modified SSAT-I for the Grade 3 test differed based on availability at different testing sites.

Testing procedure. The administration of all modified tests took place during the fall semester of the school year. Packets containing sufficient numbers of tests were sent to the Testing Coordinators in each participating school system. In most instances, the LD coordinators arranged for administration of the tests by the LD resource teachers for the participating students. All testing was completed in the LD resource rooms. The teachers were given a general set of directions with regard to how to proceed; those teachers who administered the first communication items were provided with directions for administering them. The subsections of the modified

SSAT-I as well as large or regular print versions were assigned randomly to the participating school districts. All test scoring was completed by a project research assistant who also prepared the data for analysis.

Data analysis. Scores for varying numbers of third grade students administered modified forms of the SSAT-I were available for analysis. Comparison of these scores were completed using *t* tests for independent samples; the level of significance of the tests was set at 0.01. Data from LD students administered the regular (non-modified) versions of the SSAT-I also were available for comparison. Because the circumstances of testing differed for students providing these data, descriptive rather than statistical comparisons of the scores were completed. The current practice of the Florida State Department of Education, Student Assessment Section, is to report SSAT-I performance of 3rd grade students according to percentages "mastering" the standards (53) and skills (78) within the test. The criteria used to determine and report mastery of the SSAT-I skills are based on percentages of items within a skill answered correctly. The percentage of LD students to "master" the skills when administered the modified SSAT-I was calculated and compared to similar data reported by the Studuent Assessment Section personnel relative to the regular SSAT-I.

Results

Average performance scores for students administered regular print and large print versions of the modified SSAT-I (Grade 3) are presented in Table 1; *t* statistics for tests of differences between

these scores are indicated also. Differences between the performance scores of students administered the regular print and large print versions of the modified SSAT-I (Grade 3) were not significant on any subsection; the overall performance scores of students tested with the regular print version ($\bar{X}$ = 82% correct) were not significantly different from those of students tested with the large print tests ($\bar{X}$ = 86%).

Insert Table 1 about here

Visual inspection of item performance data also indicated that LD students performed similarly on regular and large print versions of the modified SSAT-I. For example, of the students administered the subsection two items for Grade 3, 100% of them answered items 50 and 51 correctly on the regular print tests and 99% answered these items correctly on the large print tests; 74% answered the regular print item 73 correctly while 75% answered the large print item correctly. Large differences (i.e., greater than 20%) between performances on the regular and large print items occurred very seldom (e.g., only on item 112) and no pattern of superior item performance on either version of the modified SSAT-I was evident.

The percentages of students to "master" each skill measured on the regular and modified versions of the SSAT-I are presented in Table 2. On most (i.e., over 80%) of the skills, more of the LD children who were administered the modified test version demonstrated mastery. On many skills, over 20% more of the students administered the

modified tests demonstrated mastery than did students administered the regular version. For example, while 53% of the third grade LD students "mastered" following directions to complete a task (i.e., RK12) on the regular versions of the test, 73% of the LD students "mastered" that skill when it was measured on the modified version of the test.

Insert Table 2 about here

Twenty items from the third grade SSAT-I were selected randomly and percentages of students answering them correctly were compared; these data are presented in Table 3. Approximately 2000 large print versions of the regular SSAT-I (Grade 3) were available for use by LD students; percentages of only four students using them were available for comparison. The relatively small number of subjects available for this analysis limits the usefulness of this final comparison; however, some conclusions appear warranted. A very small percentage of the LD students took advantage of the large print version of the regular SSAT-I. Performance on the modified SSAT-I was comparable to or better than that on the regular SSAT-I for approximately 75% of the items evaluated.

Insert Table 3 about here

Discussion

The assessment of minimum competency is a controversial issue.

General problems relative to the assessment of exceptional students have been identified; Florida statutes allow for modifications of testing instruments and procedures when assessing handicapped students. To date, most modifications have been procedural rather than instrumental in nature. The purpose of this research project was to provide descriptive data relative to the effects of physical modifications of the test on the performance of third grade learning disabled students.

Over 300 students were administered one of two versions of the modified SSAT-I (Grade 3 and 5); each student answered items in a subsection (ranging from 33 to 48 items) randomly assigned according to county school districts participating. Percentages of students answering each item correctly were obtained as were total subsection scores and percentages of students "mastering" each skill within the test. Comparisons among test items and between performance scores on regular and large print versions of the test were completed; additionally, an analysis of LD students' performance on the modified SSAT-I and that of LD students on the regular SSAT-I was completed.

In general, LD students performed quite well on the modified versions of the SSAT-I. For example, the average overall percent of items answered correctly was over 80%; the participating students' average performance score on the skills measured by the SSAT-I was greater than 80%. Performance on the regular print and large print versions of the test subsections were similar. The performance of students administered the modified SSAT-I was considered to be better than that of LD students administered the regular SSAT-I.

This research was conducted to study testing modifications for use with LD students. Several conclusions appear warranted. First, little research is being conducted nationally to address the effects of specific rather than procedural modifications on the performance of exceptional students on minimal competency tests. Currently, Florida is a national leader in this effort. Second, a variety of simple test modifications can be made in any competency test. Some of the changes that seem to facilitate performance of LD students are:

(a) completion of subsections of the test that include 30-40 items at a time

(b) adding at least one example for each different set of items within any section of the test

(c) grouping items that measure similar skills together in progressive order of difficulty from easiest to most difficult

(d) placing answer options in a vertical format with flattened, horizontal elliptical ovals for answer bubbles placed on the right

(e) using unjustified formats for reading comprehension passages and placing them in separate boxes set off from the sentences testing comprehension

(f) using continuation arrows and stop signs to organize the flow of items within the tests

The differences in performance of students tested with large print and regular print versions of the modified SSAT-I were negligible; preparation of a large print modified version of a competency test to facilitate performance of LD children does not appear warranted.

As Cohen and Haney (1980) indicated, "administering tests to determine whether students have achieved 'minimum competency' in particular subjects is a recent enthusiasm" (p. 5). The practice

is founded on the principle of minimalism; that is, that certain minimum standards are necessary for successful adaptation in life. Regardless of the elusive, often nebulous, quality of these minimum standards, minimal competency testing proponents assume the tests measure the content in unbiased fashion. The results of this research suggest that LD students perform better (demonstrate competence) on a modified version of their minimum competency test. At the very least, these results should be provocative for teachers, administrators, and educational researchers.

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Footnote

Bob Algozzine is also a Professor of Special Education at the University of Florida, Gainesville.

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Table 1

Third Grade Students' Performance on Modified Version of State Student Assessment Test[a]

Subsection		Version: Regular Print	Version: Large Print	t[b]
1. Communication (44 items)	$\bar{X}$	67.4	89.4	-2.69
	SD	23.9	11.8	
	n	9	40	
2. Communication (36 items)	$\bar{X}$	86.4	81.0	1.92
	SD	13.9	16.4	
	n	43	75	
3. Mathematics (36 items)	$\bar{X}$	92.2	89.4	1.14
	SD	9.0	12.9	
	n	25	54	
4. Mathematics (33 items)	$\bar{X}$	81.9	83.8	-0.57
	SD	17.1	15.0	
	n	46	53	

[a]Means reflect average percentages of items within a subsection answered correctly.

[b]Test statistics are nonsignificant at $\alpha = 0.01$.

Table 2

Percentage of Third Grade LD Students Mastering Communications Skills on SSAT-I[a]

Skill	SSAT-I Standard Version	SSAT-I Modified Version
Communication		
RA01	85	92
RA02	78	92
RC04	77	78
RF06	67	86
RG07	65	86
RH08	52	68
RI09	50	64
RH10	36	78
RK12	53	73
RM14	68	82
WH02	81	87
WB03	93	95
WC04	58	64
WG09	64	80
WI13	88	92
Mathematics		
MA01	94	96
MB02	95	86
ME07	59	69
MF09	92	98
MF10	78	94
MG12	69	84
MG13	69	96
MG14	58	86
MO17	71	76
MO18	87	86
MO20	80	80
M[illegible]	76	80
MT22	67	72
MV24	49	65

[a]Number of LD students administered standard version of SSAT-I (Grade 3) was 4112; number administered modified version varied.

Table 3

Percentage of Students Answering Selected Items Correctly on Various Versions of the SSAT-I (Grade 3)

Item	Version: Standard Regular Print[a]	Standard Large Print[b]	Modified Regular Print[c]	Modified Large Print[c]
1	66	75	67	95
4	88	100	100	93
8	95	100	89	95
15	82	100	56	63
19	55	25	67	90
24	74	75	67	85
41	53	75	78	95
46	98	75	86	69
51	92	75	100	99
58	61	75	84	75
70	63	25	86	81
73	69	75	74	75
75	64	25	65	59
83	94	50	96	93
87	89	100	100	96
95	87	75	88	93
118	85	25	85	85
121	81	50	100	98
123	96	100	83	87
133	93	50	85	79

[a] Percentages based on performance of 4119 or 4122 third grade students.

[b] Percentages based on performance of 4 third grade LD students.

[c] Percentages based on varying numbers of third grade LD students.

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